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10/791,079	03/02/2004	Brad Geving	USA.342-1	2949

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EXAMINER

MAI, NGOCLAN THI

ART UNIT	PAPER NUMBER
1742	

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/791,079
Filing Date: March 02, 2004
Appellant(s): GEVING ET AL.

3D Systems, Inc.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 2, 2005 appealing from the Office action mailed September 30, 2005.

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Art Unit: 1742

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,554,218	Gardner et al.	11-1985
5,782,954	Luk	7-1998
6,048,379	Bray et al.	4-200

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

- I. Claims 1-7, 9-11, 34-43 and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al. (U.S. Patent No. 4,554,218).

Art Unit: 1742

Gardner et al discloses a powder mixture for forming molded composite articles comprising 70 grams tungsten powder, 930 grams powdered A6 tool steel and 57 grams polymer binder which is corresponding to powder mixture containing 6.6 wt.% tungsten, 88 wt.% A6 tool steel and 5.4 wt.% polymer binder, (col. 16, lines 50-60). As for the binder Gardner et al teaches utilizing thermoplastic-thermoset binder mixture, which contains 29.6 parts bisphenol A epoxy resin, col. 8, lines 62-66. Gardner et al therefore teaches using "a polymeric binder" having the claimed weight percentage (5.4 wt% x 0.296).

While the amount of steel taught does not overlap that is claimed by the appellants, 88% vs. 88.75%, however it has been established that a prima facie case of obvious exists where the claimed ranges and the prior art ranges do not overlap but are closed enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 779 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

Regarding claims 2-4 and 37-39, Gardner et al discloses employing second metal, i.e. steel having mean diameter of from 1 to 100 microns, col. 7, lines 4, lines 8.

Regarding claims 5 and the limitation of spherical steel alloy of claim 36, Gardner et al teaches the second metal can be irregular or regular shaped particle (col. 7, lines 4-6). Note that regular shaped particle broadly includes the spherical shape claimed by the appellant.

Regarding claims 6-7 and 40-41, Gardner et al teaches employing first metal, i.e. high melting metal, having particle size preferably about 1-44 microns.

As for the amount of high melting temperature fine particulate comprising about 8 weight percent of the powder blend, in claims 9 and 42, although Gardner et al teaches employing 6.6 wt.%, the difference in a small amount will not support the patentability of the subject matter encompassed by the prior art unless there is evidence indicating such amount is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation." See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); *Merck & Co. Inc. v. Biocraft Laboratories*

Art Unit: 1742

Inc., 874 F.2d 804, 10 USPQ2d (Fed.cir), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997). Furthermore, the specification contains no disclosure of either the critical nature of the claimed amount or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in the claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d, 1575, 1578, 16 USPQ2d, 1936 (Fed. Cir. 1990).

Regarding claims 35 and 51 while Gardner et al does not specifically teach using mild steel alloy as the steel alloy, however it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize any steel alloy known in the art including the claimed mild steel alloy as the ferroalloy taught by Gardner et al to form a blend powder, absence unexpected result.

II. Claims 12-13, 32, 45-46, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al in view of Bray et al. (US 6,048,379)

Gardner et al discloses the claimed powder blend substantially as claimed. The differences between Gardner et al and the appellant are that Gardner et al does not teach using nylon as the polymeric binder as recited in claims 12-13 and 45-46 and tungsten carbide as the high melting temperature metal as recited in claims 32 and 49.

Regarding claims 12-13 and 45-46, Bray et al. discloses employing nylon of the type claimed by the appellant to binder tungsten powder and stainless steel fiber, col. 2, line 65 to col. 3, line 15.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the polymer binder of Gardner with the nylon of the type taught and known by Bray in the powder blend of Gardner since utilizing such binder as taught by Bray can be used to bind the metal powder of Gardner et al.

Regarding claims 32 and 49, while Gardner et al does not specifically teach employing tungsten containing material such as tungsten carbide as the high melting temperature, Bray teaches tungsten or

Art Unit: 1742

tungsten carbide can be used in the powder blend, col. 7, lines 12-15. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute tungsten carbide for tungsten in the powder blend of Gardner et al. since it is known that it can be used in place of tungsten as taught by Bray.

III. Claims 14-15 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al in view of Luk.

Gardner et al discloses the claimed powder blend substantially as claimed. The difference between Gardner et al and the appellant is that Gardner et al does not teach employing flowing agent, which is fumed silica.

Luk teaches employing flowing agent such as silica, which is commercially available as the Aerosil line of silicon dioxides and it is a trade name for fumed silica, to enhance the flowability of the powder composition, col. 1, lines 56-65.

Since Luk discloses the claimed flowing agent is conventionally known in the same field of endeavor or the analogous metallurgical art for improving the powder flowability, therefore, combining known ingredient having known functions, to provide a composition having the additive effect of each of the known functions is within realm of performance of ordinary skill artisan. In re Castner, 186 USPQ 2 13 (2 I 7). The use of conventional materials to perform their known functions in a conventional process is obvious. In re Raner, 134 USPQ 343 (CCPA 1962).

(10) Response to Argument

I. Claims 1-7, 9-11, 34-43 and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al. (U.S. Patent No. 4,554,218).

For the above rejection appellant has argued that Gardner et al. does not teach the claimed polymeric binder weight percent and therefore cannot be used as a basis of an obvious type rejection under the provision of 35 U.S.C. 103(a). Appellant argues that claims 1 and 36 of the instant application

Art Unit: 1742

limit the binder composition via: "a polymeric binder from about 1.25 to about 2.25 percent by weight;" and that the teaching of Gardner et al. is not in this range.

The examiner disagrees in that the instant claims recites "a polymeric binder" which is interpreted as "one polymeric binder". Gardner in col. 7, lines 40-41, 60-61 and col. 8, lines 45-46 and 62-63 discloses the binder can be thermoplastic or mixture of thermoplastic and thermoset, therefore both individual polymeric binder and binder mixture disclosed in Gardner can be considered as "a polymeric binder". While the examples in Gardner does not specifically teach using mixture of thermoplastic-thermoset binder, it would have been obvious to one of ordinary skill in the art to employ the mixture since this mixture is taught by Gardner to be used as binder. It would also be expected that the total amount of the mixture of binder be the same as the amount disclosed in Example 1. Since Gardner teaches the thermoset binder or "one polymeric binder" in the binder mixture comprising 29.6 part "Epon" 825 bisphenol-A epoxy resin, this corresponds to "a polymeric binder" as recited by the claims.

In response to appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the appellant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Here Gardner specifically teaches the binder can be a mixture thermoplastic-thermoset binder, col. 7, lines 40-41, 60-61 and col. 8, lines 45-46 and 62-63. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the mixture of thermoplastic-thermoset where the thermoplastic or thermoset can be seen as "one polymeric binder".

The appellant also argues on pages 10 and 11 of the appeal brief that the sum of the thermoplastic-thermoset binder when use in Example 2 would result in binder in the amounts outside the limitation of claims 1 and 36. However as taught by Gardner in col. 7, lines 21-39 the binder is selected to provide

Art Unit: 1742

good flow properties of the metal powder when warmed and yet allowing the metal-binder mixture to be solid at room temperature so that a green article molded therefrom can be normally easily handled without collapse or deformation. Thus it would have been obvious to one skilled in the art to adjust the amount of the polymeric binder in the metal powder mixture to provide the metal powder mixture with desired flow properties (MPEP 2144.05 II). As for the specific amount of "a polymeric binder" recited in the claims, where patentability is said to be based upon particular chosen dimensions or upon another variable recited in the claim, it is the appellant's burden to show the criticality of the claimed amount 1.25 wt% to about 2.2.5 wt% of binder concentration (*In re Woodruff*, 919 F.2d, 1575, 16 USPQ 2d, 1934 (Fed. Cir. 1990)).

II. As for claims 12-13, 32, 45-46, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al in view of Bray et al. (US 6,048,379). Appellant essentially argues that because the Gardner et al primary reference does not teach the claimed polymeric binder weight percent and therefore cannot be used in combination with the secondary reference to Bray et al. for the rejections of these claims under the provision of 35 U.S.C. 103(a). The examiner maintains that the Gardner et al. primary reference renders the claimed amount of a polymer binder obvious as indicated in (I) above therefore the rejection of these claims as unpatentable over Gardner et al in view of Bray et al is proper.

II. As for claims 14-15 and 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al in view of Luk (U.S. Patent No. 5,782,954).). Appellant essentially argues that because the Gardner et al primary reference does not teach the claimed polymeric binder weight percent and therefore cannot be used in combination with the secondary reference to Luk for the rejections of these claims under the provision of 35 U.S.C. 103(a). The examiner maintains that the Gardner et al. primary reference renders the claimed amount of a polymer binder obvious as indicated in (I) above and therefore the rejection of these claims as unpatentable over Gardner et al in view of Luk et al is proper.


Art Unit: 1742

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


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